Small Business Innovation Research/Small Business Tech Transfer

Automated Design and Analysis Tool for CLV/CEV Composite and Metallic Structural Components, Phase II

Completed Technology Project (2006 - 2008)

Project Introduction

The innovation of the proposed effort is a unique automated process for the analysis, design, and sizing of CLV/CEV composite and metallic structures. This developed process will permit hundreds of conceptual and preliminary design trade studies to be performed in a matter of only a few days rather than several months. This shorter time is made possible by replacing or reducing currently required experienced analyst interaction (man in the loop) with predefined knowledge based sizing templates for laminate strength and producibility optimization. Innovative virtual structural component definitions that 'float' between automatic HyperSizer to FEA iteration cycles redefine acreage surfaces areas while simultaneously including connecting bonded/bolted joints. The resulting capability will be an open architecture built within the HyperSizer

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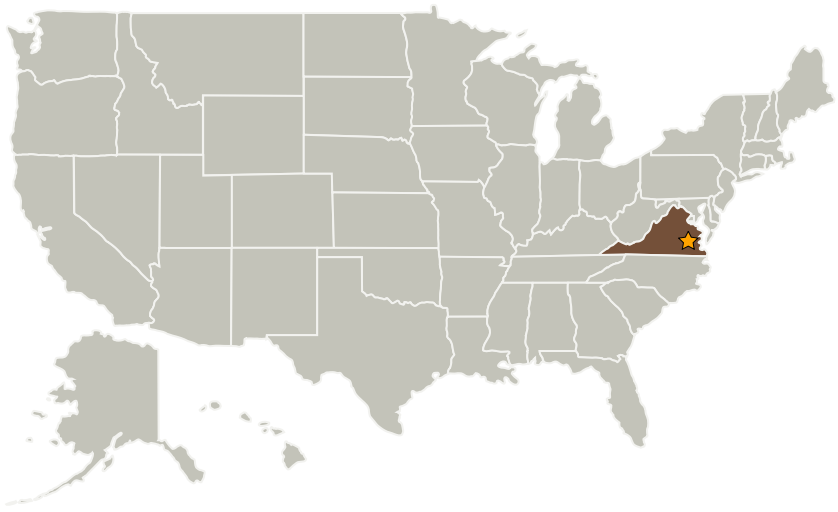
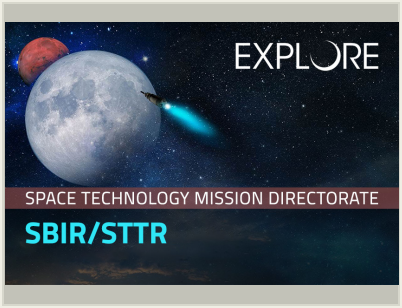
commercial software suitable for internally integrating NASA or industry developed specialty discipline analysis codes and externally integrating HyperSizer with NASA larger design systems. This new capability will be unique in that no other commercial or non-commercial tool will have the same level of depth, breadth, accuracy, speed, verification & validation, and software robustness for performing weight prediction and reduction, structural integrity margins-of-safety reporting, and reliability prediction and improvement.

Primary U.S. Work Locations and Key Partners





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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia
Collier Research & Development Corporation	Supporting Organization	Industry	Hampton, Virginia

Primary U.S. Work Locations
Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX15 Flight Vehicle Systems
  - TX15.1 Aerosciences
    - TX15.1.3 Aeroelasticity